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(54) **Disposable wipe-off article**

Einweg Wischgegenstand

Article d'essuyage jetable

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## Description

[0001] The present invention related generally to a disposable wipe-off article and more particularly to such an article used to clean a house floor or the like.

[0002] A wipe-off article for cleaning a house floor or the like is well known, for example, in Japanese Laid-Open Patent Application No. Hei5-245090 according to which a base sheet is covered with a wipe-off cloth of nonwoven fibrous fabric or the like and the latter is intermittently bonded to the former. The wipe-off cloth is immersed with surfactant and the like so that the floor can be reliably wiped off.

[0003] However, the known wipe-off article is disadvantageous in that fibers forming the article serving to wipe the floor may be torn off when they are caught by small projections present in the floor. This readily occurs particularly when short fibers are used in the wipe-off article.

[0004] Document EP-A-596532 describes a film laminated material, wherein a first film layer comprising a thin film of a thermoplastic material and a second fibrous layer comprising e.g. continuous filaments are bonded together in a spaced apart bonding pattern having apertures formed therein. Any geometrical bonding pattern can be used, with the honeycomb pattern as a preferred embodiment. The aim of the invention as described in this document is to provide a film laminate that has enhanced comfort and softness when placed in contact with human skin, as well as having improved liquid distribution and management properties. The products of the invention as described in this document are not readily usable for heavy duty cleaning, and this document does not solve the problem of fibres getting torn off when caught by small projections present on the floor.

[0005] Document US 5,368,913 describes an anti-static nonwoven fabric, comprising non-conducting continuous filaments and conducting continuous filaments bonded together. Said fabric is useful in a product requiring antistatic characteristics. The fabric is made according to the skills known in the art: the filaments are spunbonded to form a web and can be further bonded to each other by chemical or thermal bonding. Any kind of thermal embossing pattern is suitable to obtain the product as described in this document.

[0006] It is a principal object of the invention to improve a disposable wipe-off article so as to prevent fibers forming the article from being readily torn off.

[0007] The object set forth is achieved, according to the invention, by providing

[0008] A disposable wipe-off article comprising a heat-sealable base sheet and a wipe-off layer of heat-sealable continuous filaments bonded to the based sheet (10) said base sheet and said wipe-off layer having respectively longitudinally and transversally opposite sides, characterised in that the wipe-off layer is formed with the continuous filaments obtained by open-

ing and spreading a tow thereof and bonded to the base sheet by a plurality of heat-seal lines extending to cross the continuous filaments and intermittently arranged longitudinally of the continuous filaments, and transversely opposite sides of the base sheet extend outwardly from transversely opposite sides of the wipe-off layer.

Fig. 1 is a perspective view showing a holder fitted with a wipe-off article according to the present invention;

Fig. 2 is a perspective view showing a first embodiment of the wipe-off article;

Fig. 3 is a sectional view taken along a line III-III in Fig. 2;

Fig. 4 is a perspective view shown in a second embodiment of the wipe-off article being different from the embodiment shown by Fig. 2; and

Fig. 5 is a perspective view showing a third embodiment of the wipe-off article being also different from the embodiment shown by Fig. 2.

[0009] Fig. 1 shows a holder 2 fitted with a disposable wipe-off article 1 in a perspective view. The holder 2 has a base plate 3 to be fitted with the wipe-off article 1 and a stick 4. Specifically, after the wipe-off article 1 which is wider than the base plate 3 has been put against the lower surface of the base plate 3, opposite side margins of the article 1 extending outward from transversely opposite sides of the base plate 3, respectively, are folded onto the upper surface of the base plate 3 and fixed to the upper surface of the base plate 3. In use of the wipe-off article 1 in combination with the holder 2, a house floor or the like may be gently scrubbed by the article 1 with the stick 4 held in hand.

[0010] The article 1 perspectively shown by Fig. 2 corresponds to that shown by Fig. 1 which has been unfolded. Fig. 3 is a sectional view taken along a line III-III in Fig. 2.

[0011] Referring to Figs. 2 and 3, the article 1 comprises a heat-sealable base sheet 10 made of a plastic film or nonwoven fabric and wipe-off layers 12 formed by a heat-sealable continuous filaments 25 fixedly bonded to upper and lower surfaces 10A, 10B of the base sheet 10, respectively.

[0012] Respective side edges 7 of the base sheet 10 which are transversely opposite to each other as viewed in Fig. 3 are folded back to form double-layered edges which are, in turn, fixedly integrated by heat-seal spots 15 provided on desired locations. Each of these double-layered side edges 7 is not readily torn even when it is fastened by clips 8 of the holder 2.

[0013] The continuous filaments 25 of the wipe-off layers 12 are arranged substantially parallel to long sides of the article 1 and bonded to the base sheet 10 by heat-seal lines extending to cross the continuous filaments 25. To obtain such wipe-off layers 12, a tow or a bundle of the heat-sealable continuous filaments 25

is opened and expanded to an appropriate width in a web-like state, followed by continuously feeding this on to the upper and lower surfaces of the heat-sealable base sheet web longitudinally thereof as the opened tow and base sheet are bonded together by heating and pressing against each other along a plurality of heat-seal lines extending to cross the opened tow. Finally, the opened tow is cut together with the base sheet web together in a desired length. After cutting, the base sheet web forms the individual base sheets 10 and the opened tow forms the individual wipe-off layers 12.

[0014] The base sheet 10 and wipe-off layers 12 are bonded together along longitudinally opposite ends by heat-seal lines 11 extending orthogonally to the continuous filaments 25 and are bonded together in a region defined between these longitudinally opposite ends by intermittently arranged curved heat-seal lines 9 which cross the continuous filaments substantially in an oblique direction. Regarding the wipe-off layers 12, the continuous filaments 25 occupying upper and lower side edges 16 as viewed in Fig. 2 (left and right side edges as viewed in Fig. 3) are bonded to the base sheet 10 by heat-seal spots 17. These heat-seal spots 17 allow the continuous filaments 25 to be fixed to the base sheet 10 even if the heat-seal lines 9 do not extend to the opposite side edges 16. Along the heat-seal lines 11 of the longitudinally opposite ends, the base sheet 10 and the continuous filaments 25 are integrally heat-sealed and consequently the base sheet 10 is sufficiently thickened along these heat-seal lines 11 not only to prevent the base sheet 10 from being readily torn from these longitudinally opposite ends but also to prevent an appearance of the article 1 before as well as after its use from being marred due to entanglement of cut ends of the continuous filaments 25. It should be understood here that the heat-seal lines 11 along the longitudinally opposite ends as well as the heat-seal spots 17 are not essential to the article 1 and may be eliminated. On the other hand, the heat-seal lines 9 are essential ones in order to integrate the base sheet web with the opened tow. As the opened tow is heated under a pressure to form the heat-seal lines 9, regions in the proximity of the respective heat-seal lines 9 are also compressed and a density as well as a rigidity of the continuous filaments 25 become relatively high in these regions. With the wipe-off layers 12 having these regions 18, the regions 18 have rigidity higher than the remaining region and function to scratch off rather than wipe off the floor dust. Thus the wipe off effect of the article 1 is improved thereby. When the heat-seal lines 9 are curved and cross almost all of the continuous filaments 25 as in the embodiment shown by Figs. 2 and 3, the regions 18 having a high rigidity can effectively wipe off the floor dust independently of the direction in which the cleaner is moved.

[0015] As the article 1 according to the embodiment shown by Figs. 2 and 3 has the wipe-off layers 12 on both surfaces 10A, 10B of the base sheet 10, after the one surface has been fully used, the article 1 may be

reversed and the other surface may be used.

[0016] In the article 1 shown by Fig. 4 in a perspective view, the heat-seal lines 9 obliquely cross the continuous filaments 25 in a manner different from that shown by Fig. 2. As view in Fig. 4, these heat-seal lines 9 are straight lines sloping down rightward in parallel one to another.

[0017] The article 1 shown by Fig. 5 in a perspective view includes, in addition to the heat-seal lines 9 as shown by Fig. 4, a plurality of the heat-lines 9 obliquely crossing the continuous filaments 25 and sloping down leftward in parallel one to another. These two groups of heat-seal lines 9 mutually cross so as to form a grid pattern. Except for the arrangement of the heat-seal lines 9, the article 1 shown by Fig. 5 is similar to the article 1 shown by Fig. 2.

[0018] In the wipe-off article 1 according to the invention, the base sheet 10 may be formed by a heat-sealable nonwoven fabric of synthetic resin or a plastic film and, if desired, by such nonwoven fabric mixed with non-heatsealable fibers such as rayon or cotton of 20% by weight or less. In this case, the non-heatsealable fibers should be unremovably embedded in the base sheet 10 and the continuous filaments 25 heat-sealed together.

[0019] As the continuous filaments 25 forming the wipe-off layers 12, it is preferred to use heat-sealable synthetic fibers of 2-20 deniers. Such filaments 25 include composite fibers or crimped fibers obtained by heat treating said composite fibers. If desired, the continuous filaments 25 may be subjected to various treatments such as surfactant immersion, antistatic finishing, electrically charging, or treatment to make the fibers hydrophilic.

[0020] With the wipe-off article of the invention, the fibers rarely fall off during operating of wiping off, since a plurality of continuous filaments are bonded to the base sheet by the heat-seal lines extending to cross the continuous filaments and intermittently arranged longitudinally of the continuous filaments. In the embodiment having the heat-seal lines obliquely crossing the continuous filaments, the high rigidity regions generated in the proximity of the heat-seal lines can effectively wipe the floor dust off independently of the direction in which the article is moved.

## Claims

1. A disposable wipe-off article (1) comprising a heat-sealable base sheet (10) and a wipe-off layer (12) of heat-sealable continuous filaments (25) bonded to the based sheet (10) said base sheet (10) and said wipe-off layer (12) having respectively longitudinally and transversely opposite sides, characterised in that the wipe-off layer (12) is formed with the continuous filaments (25) obtained by opening and spreading a tow thereof and bonded to the base sheet (10) by a plurality of heat-seal lines (9) ex-

tending to cross the continuous filaments (25) and intermittently arranged longitudinally of the continuous filaments (25), and transversely opposite sides (7) of the base sheet (10) extend outwardly from transversely opposite sides of the wipe-off layer (12).

2. A disposable wipe-off article (1) according to Claim 1, wherein the heat-seal lines (9) comprise a plurality of curved lines substantially obliquely cross the continuous filaments (25) and extending in parallel one to another.
3. A disposable wipe-off article according to Claim 1, wherein the heat-seal lines (9) comprise a plurality of straight lines obliquely cross the continuous filaments (25) and extending in parallel one to another.
4. A disposable wipe-off article (1) according to Claim 3, wherein the heat-seal lines (9) comprise a plurality of straight lines mutually cross to present a grid pattern as a whole.
5. A disposable wipe-off article (1) according to Claim 1, wherein the heat-sealable base sheet (10) is made of a plastic film or nonwoven fabric.
6. A disposable wipe-off article (1) according to Claim 1, wherein the continuous filaments (25) includes crimped fibers obtained by heat treating composite fibers.

#### Patentansprüche

1. Einwegwischartikel (1), der eine heiss verschweissbare Grundsicht (10) und eine Wischsicht (12) aus heiss verschweisbaren kontinuierlichen Filamenten (25) aufweist, welche an die Grundsicht (10) gebunden ist, wobei die Grundsicht (10) und die Wischsicht (12) jeweils längsseitig und querseitig entgegengesetzte Seiten besitzen, **dadurch gekennzeichnet, dass** die Wischsicht (12) aus den kontinuierlichen Filamenten (25) gebildet wird, die man durch Öffnen und Ausbreiten von Kammgarn aus denselben erhält und die mit der Grundsicht (10) durch eine Vielzahl von heiss verschweisenden Zeilen (9) verbunden ist, die sich quer über die kontinuierlichen Filamente (25) erstrecken und in Abstand in der Längsrichtung dieser kontinuierlichen Filamente (25) angeordnet sind, und dass die quer gegenüberliegenden Seiten (7) der Grundsicht (10) sich von den quer gegenüberliegenden Seiten der Wischsicht (12) ausgehend nach außen hin erstrecken.
2. Einwegwischartikel (1) gemäß Anspruch 1, bei welchem

chem die heiss verschweisenden Zeilen (9) aus einer Vielzahl von gekrümmten Zeilen bestehen, welche sich im wesentlichen schräg zu den kontinuierlichen Filamenten (25) über dieselben hinweg erstrecken und sich parallel die einen zu den anderen ausdehnen.

3. Einwegwischartikel (1) gemäß Anspruch 1, bei welchem die heiss verschweisenden Zeilen (9) aus einer Vielzahl von geraden Zeilen bestehen, welche sich schräg zu den kontinuierlichen Filamenten (25) über dieselben hinweg erstrecken und sich parallel die einen zu den anderen ausdehnen.
4. Einwegwischartikel (1) gemäß Anspruch 3, bei welchem die heiss verschweisenden Zeilen (9) aus einer Vielzahl von geraden Zeilen bestehen, die sich gegenseitig kreuzen, um als Ganzes eine Netzstruktur zu ergeben.
5. Einwegwischartikel gemäß Anspruch 1, bei welchem die heiss verschweisbare Grundsicht (10) aus einem Plastikfilm oder aus einem nicht gewebten Stoff hergestellt ist.
6. Einwegwischartikel gemäß Anspruch 1, bei welchem die kontinuierlichen Filamente (25) gekräuselte Fasern enthalten, die durch eine Wärmebehandlung von Verbundfasern erzielt worden sind.

#### Revendications

1. Article d'essuyage jetable (1) comprenant une feuille de base thermosoudable (10) et une couche d'essuyage (12) constituée de filaments continus thermosoudables (25) collée à la feuille de base (10), ladite feuille de base (10) et ladite couche d'essuyage (12) possédant respectivement des côtés opposés longitudinalement et transversalement, **caractérisé en ce que** la couche d'essuyage (12) est formée des filaments continus (25) obtenus en ouvrant et en étalant un écheveau de ceux-ci et collée à la feuille de base (10) par une pluralité de lignes de thermosoudage (9) s'étendant en travers des filaments continus (25) et arrangées à intervalles dans le sens de la longueur des filaments continus (25), et les côtés opposés transversalement (7) de la feuille de base (10) se prolongent vers l'extérieur à partir des côtés transversalement opposés de la couche d'essuyage (12).
2. Article d'essuyage jetable (1) suivant la revendication 1, dans lequel les lignes de thermosoudage (9) consistent en une pluralité de lignes courbes agencées essentiellement de manière oblique en travers des filaments continus (25) et s'étendant parallèlement les unes aux autres.

3. Article d'essuyage jetable (1) suivant la revendication 1, dans lequel les lignes de thermosoudage (9) consistent en une pluralité de lignes droites agencées de manière oblique en travers des filaments continus (25) et s'étendant parallèlement les unes aux autres. 5
4. Article d'essuyage jetable (1) suivant la revendication 3, dans lequel les lignes de thermosoudage (9) consistent en une pluralité de lignes droites qui se croisent pour représenter un motif d'ensemble en forme de grille. 10
5. Article d'essuyage jetable (1) suivant la revendication 1, dans lequel la feuille de base thermosoudable (10) est un film plastique ou un tissu non tissé. 15
6. Article d'essuyage jetable (1) suivant la revendication 1, dans lequel les filaments continus (25) comprennent des fibres bouclées obtenues par un traitement à chaud de fibres composites. 20

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